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(54) Tamperproof closure for containers

(57) A tamperproof closure comprises a screw closure cap (10), a container having a screw threaded region to which the cap may be screwed to close the container and one or more teeth (2) or recesses disposed adjacent the screw threaded region, and a locking member adapted to be inserted into an aperture in the cap, a portion of said member (6) extending inside the cap including a resilient projection (8) adapted to pass over the said teeth (2) or recesses as the cap is screwed upon the container, but to subsequently engage the said teeth or recesses to prevent the cap being unscrewed, the member including a handle (5), the portion (7) of the member extending in use through the aperture being adapted to fracture when the handle (5) is pulled in order to facilitate unscrewing of the cap (10).

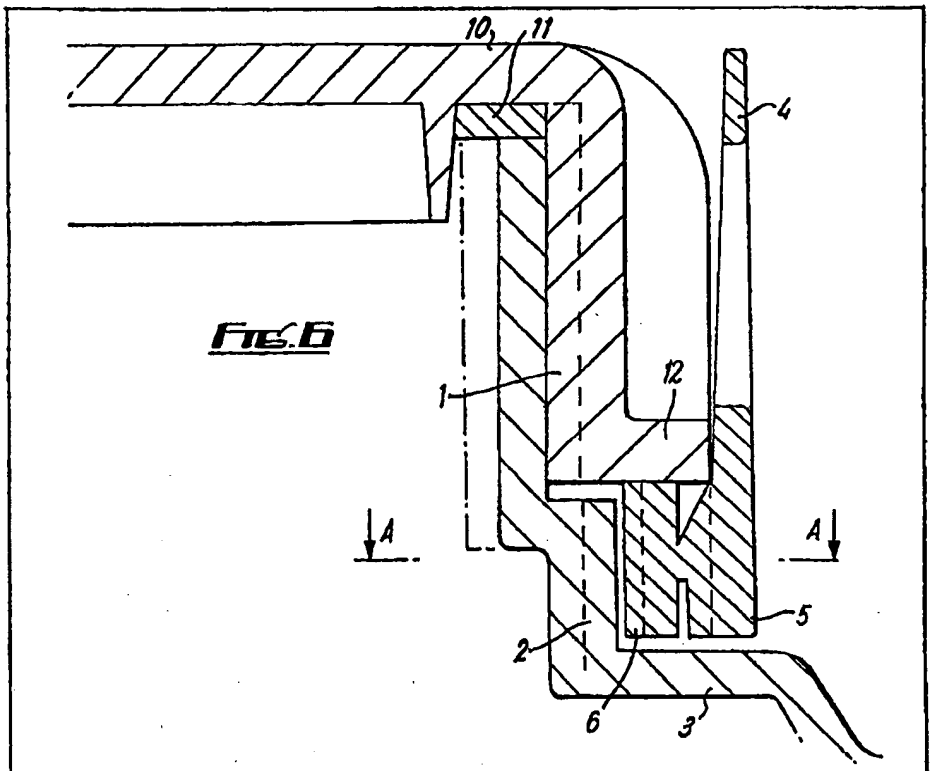


FIG. 6

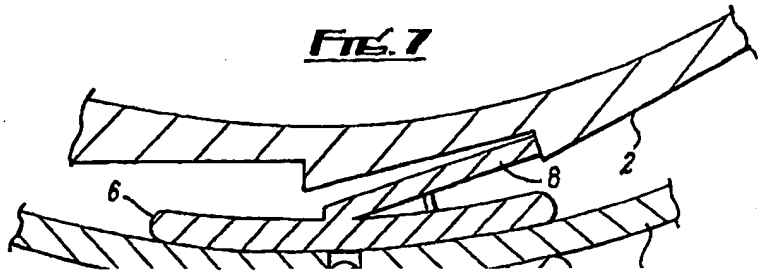


FIG. 7

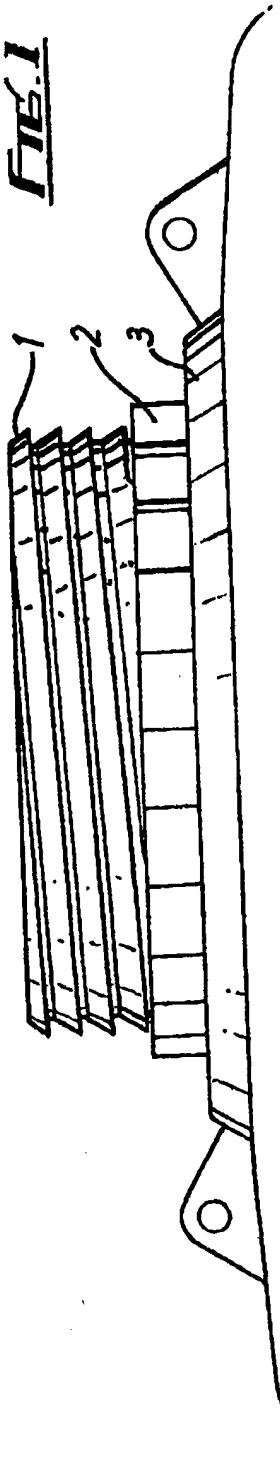


FIG.1

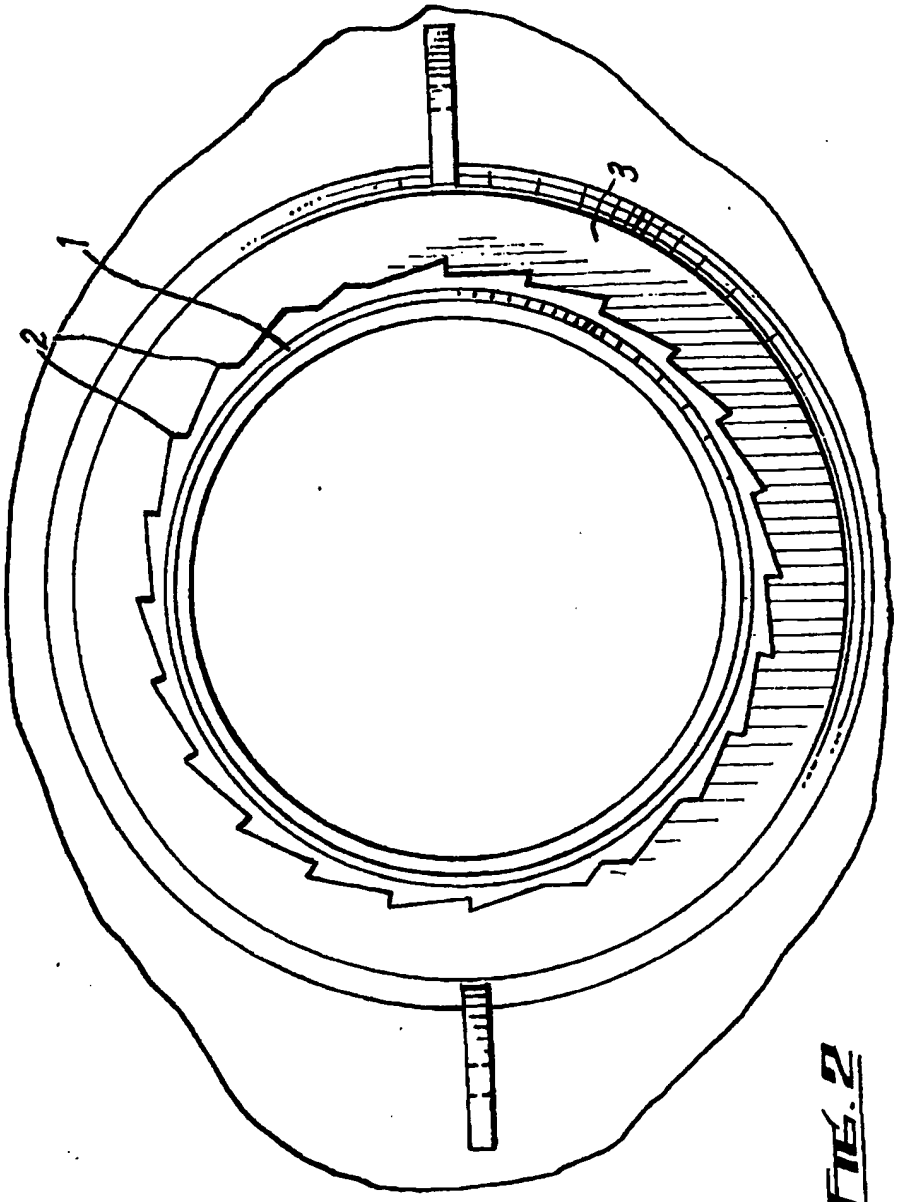


FIG.2

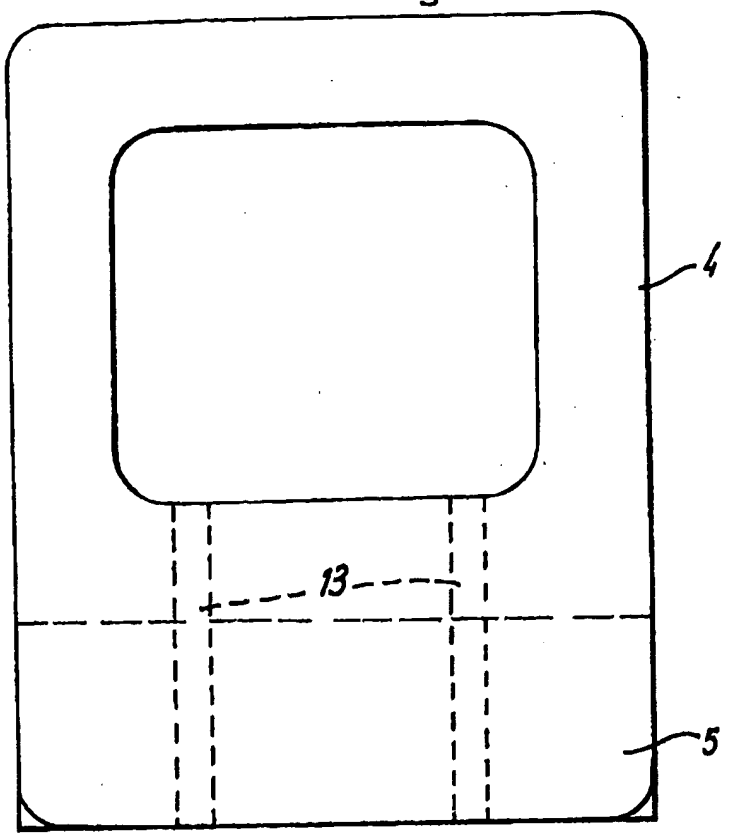


FIG.3

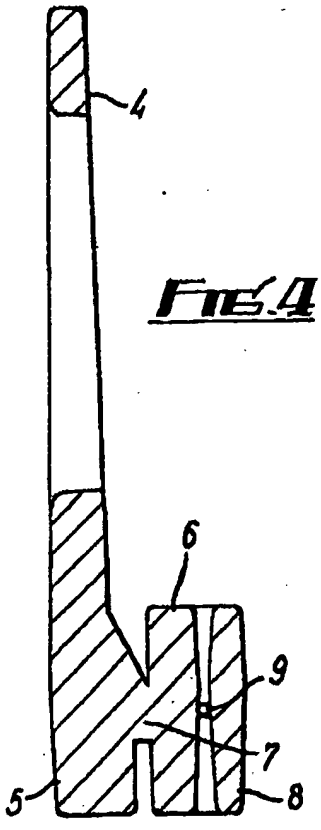


FIG.4

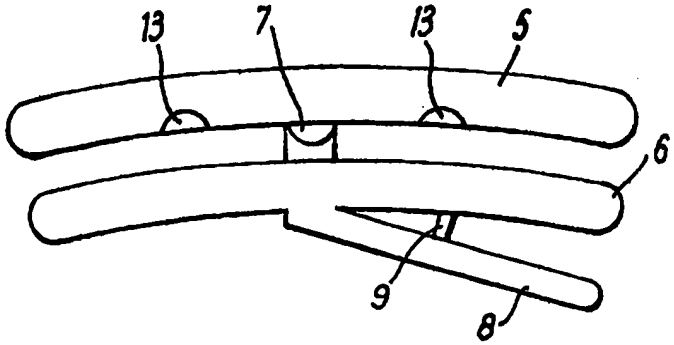


FIG.5

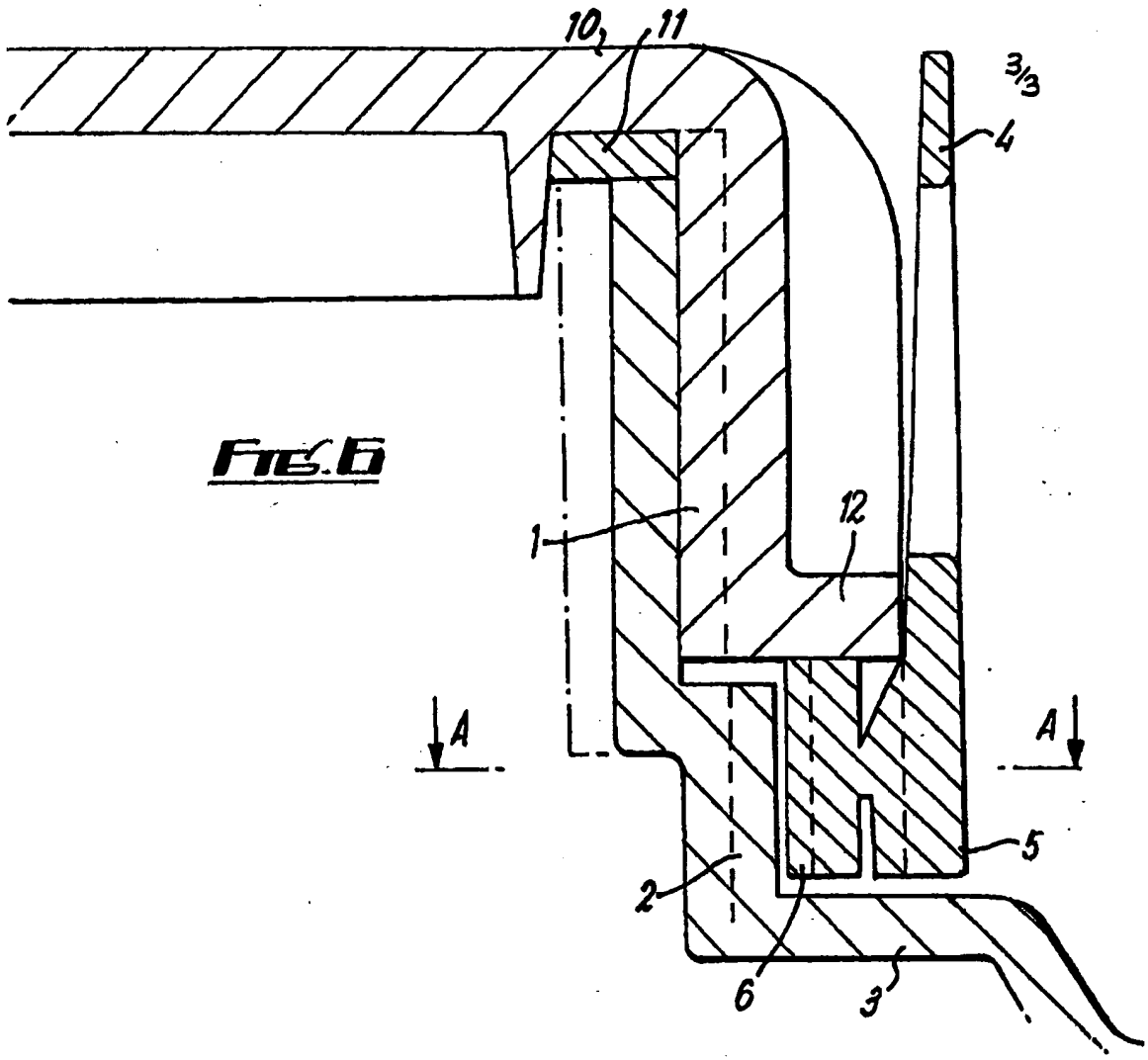
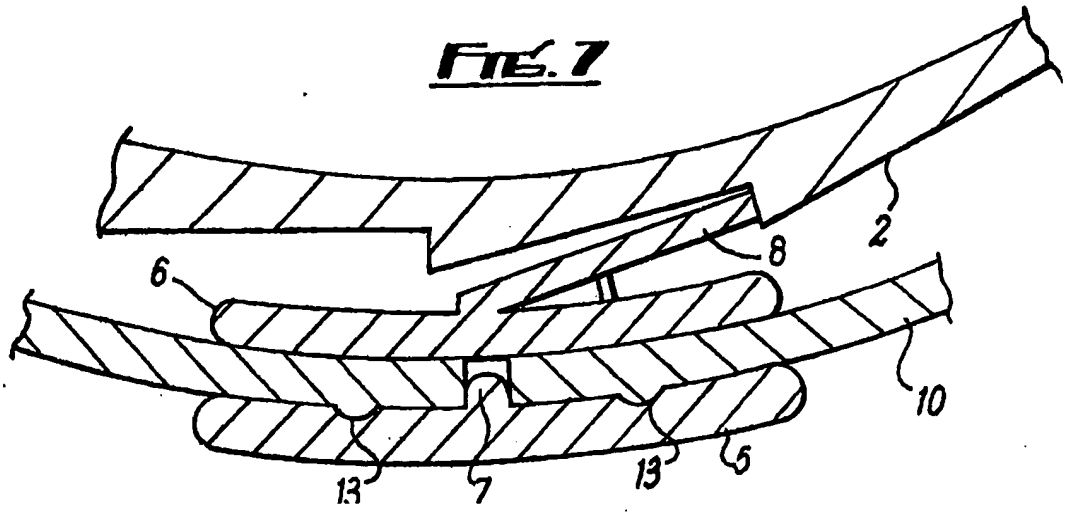


Fig.6

Fig.7



SPECIFICATION

Tamperproof closures for containers

This invention relates to tamperproof closures for containers wherein a screw threaded closure cap is screwed to a neck or top of a container. It is frequently desirable to secure such containers against tampering so that it is clearly evident if the container has been opened.

According to the present invention a tamperproof closure comprises a screw closure cap, a container having a screw threaded region to which the cap may be screwed to close the container and one or more teeth or recesses disposed adjacent the screw threaded region, and a locking member adapted to be inserted into an aperture in the cap, a portion of said member extending inside the cap including a resilient projection adapted to pass over the said teeth or recesses as the cap is screwed upon the container, but to subsequently engage the said teeth or recesses to prevent the cap being unscrewed, the member including a handle, the portion of the member extending in use through the aperture being adapted to fracture when the handle is pulled in order to facilitate unscrewing of the cap.

A single locking member may be used to secure a cap.

A closure in accordance with this invention has the advantages of simplicity and economy. The locking member may take the form of a small tag, which may be easily replaced when the container is to be resealed.

The locking member preferably occupies a minor proportion of the circumference of the cap.

Preferably the aperture in the cap comprises a slot in the skirt thereof. The locking member may be inserted into the slot when the cap is removed from the container but may not be removed when the cap is screwed upon a container into abutment with the neck of the container.

The one or more teeth or recesses preferably take the form of a saw-tooth shaped projection which cooperate with the projection of the locking member to form a ratchet.

The projection of the locking member may be elongate and may be inclined in use inwardly from the circumference of the cap so that the flexibility of the projection permits the latter to ride over the teeth as the cap is closed. Resilience of the projection causes it to engage one of the teeth is made to remove the cap without braking the locking member.

The locking member and cap may be provided with one or more axially extending splines, grooves or other keys arranged to engage in use to prevent twisting of the locking member within the aperture. The locking member may be provided, for example, with grooves arranged to engage generally axially extending ribs or splines on the outer surface of the cap.

adapted to fracture may be of a small dimension and may be shaped so as not to resist leverage upon the handle.

The handle may take any convenient form such as a ring, a cord, or a solid tab which may be shaped to the fingers of a user.

Two or more locking members may be used with a single cap for a container. Closures in accordance with this invention find application in relation to any type of secure container including containers for beverages, medicines, chemicals, foods or the like. The container and caps may be fabricated from any convenient material including plastics or metal.

The invention is further described by way of example with reference to the accompanying drawings, of which:—

Figure 1 is an elevational view of the neck of a container in accordance with the invention;

Figure 2 is a plan view of the neck of the container shown in Figure 1;

Figure 3 is an elevation of a locking member in accordance with the invention;

Figure 4 is a cross-sectional view of the member shown in Figure 3;

Figure 5 is a plan view of the member shown in Figure 3;

Figure 6 is a cross-sectional elevation of an assembled closure; and

Figure 7 is a cross-sectional plan view along A—A' of the closure shown in Figure 6.

In the following description the same numerals have been used to denote the same parts where they occur in different Figures.

Figures 1 and 2 show the neck of a container such as a plastics beer barrel. A screw threaded outlet 1 is adapted to receive a screw threaded cap. A series of saw-toothed projections 2 is disposed adjacent the threaded outlet. The body of the container 3 abuts the projections 2. The projections 2 are slightly irregular to facilitate removal of the container from a mould during manufacture.

Figures 3 to 5 show a locking member adapted for use with the container shown in Figures 1 and 2. The locking member, formed from acetyl resin, comprises a ring 4 which may be grasped by a user. The body of the member comprises an outer party-cylindrical portion 5 and an inner part-cylindrical portion 6 joined to the portion 5 by a narrow bridge 7. The bridge 7 is adapted to fracture easily when the ring is levered away from the inner portion 6. The inner portion 6 carries a laminar projection 8 which is dimensioned to be flexible when compressed against the portion 6. A spur 9 serves to maintain the projection 8 at a distance from the portion 6 when there is no such compression. The surfaces of the locking member are curved so that the bridge 7 may fit into a slot in the skirt of a screw cap for the container 3.

Axially extending grooves 13 are provided on the

Figures 6 and 7 show a cap 10 and locking member in use. A sealing ring is shown at 11. The locking member is shown with the bridge 7 engaged in a slot in the cap 10 so that the portion 6 of the locking member is disposed inside the cap and the projection 8 forms a ratchet with the saw-toothed projections 2. Movement of the cap 10 in a clockwise direction (Figure 7) to tighten the closure is possible since the projection 8 flexes to pass the saw teeth 2. Opening of the cap in an anti-clockwise direction is prevented by engagement of the end of the projections 8 with a radially extending surface of one of the projections 2. The cap 10 includes a flange 12 which cooperates with the body of the container 3 to prevent sliding of the locking member from the slot in the cap.

To open the container, the ring 4 is pulled away from the cap 10, breaking the bridge 7.

The grooves 13 cooperate with splines or ridges on the outer surface of the cap, preventing twisting of the locking member when located in the slot in the cap.

CLAIMS

1. A tamperproof closure comprising a screw closure cap, a container having a screw threaded region to which the cap may be screwed to close the container and one or more teeth or recesses disposed adjacent the screw threaded region, and a locking member adapted to be inserted into an aperture in the cap, a portion of said member extending inside the cap including a resilient projection adapted to pass over said teeth or recesses as the cap is screwed upon the container, but to subsequently engage said teeth or recesses to prevent the cap being unscrewed, the member including a handle, the portion of the member extending in use through the aperture being adapted to fracture when the handle is pulled in order to facilitate unscrewing of the cap.

2. A tamperproof closure as claimed in claim 1, wherein the locking member occupies a minor proportion of the circumference of the cap.

3. A tamperproof closure as claimed in claim 1 or 2, wherein the aperture comprises a slot in the skirt of the cap.

4. A tamperproof closure as claimed in any preceding claim, wherein the said teeth or recesses comprise saw-tooth shaped projections which cooperate in use with the projection of the locking member to form a ratchet.

5. A tamperproof closure as claimed in any preceding claim, wherein said projection is elongate and extends inwardly in use from the circumference of the cap.

6. A tamperproof closure as claimed in any preceding claim, wherein the locking member and cap are provided with one or more axially extending splines, grooves or other key means.

7. A tamperproof closure as claimed in any preceding claim, wherein the locking member is composed of acetal resin.

8. A tamperproof closure as claimed in any preceding claim, wherein the handle comprises a ring, cord or solid tab.

9. A tamperproof closure substantially as hereinbefore described with reference to Figures 1 to 7 of the accompanying drawings.

10. Any novel subject matter or combination including novel subject matter herein disclosed whether or not within the scope of or relating to the same invention as any of the preceding claims.

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